

4.4 Environmental Justice

4.4.1 AFFECTED ENVIRONMENT: COMMUNITY CHARACTERISTICS

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs Federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. Executive Order 12898 also directs the Administrator of the Environmental Protection Agency to convene an interagency Federal Working Group on Environmental Justice. One task of the Interagency Working Group is to provide guidance to Federal agencies on criteria for identifying disproportionately high and adverse human health or environmental effects on minority and low-income populations. (Note: This EIS refers to minority populations as people of color.) The Working Group has not yet issued this guidance, although it has developed draft definitions (EPA 1996), which DOE has used in this EIS analysis. Further, in coordination with the Interagency Working Group, DOE is developing internal guidance for implementing the Executive Order.

Implementation of the Proposed Action or alternatives could result in offsite health impacts due to airborne and water-borne contaminants. For air releases, DOE based its standard population dose analyses on a 50-mile (80-kilometer) radius because reasonably foreseeable dose levels

beyond that distance would be negligible. For liquid releases, the region of interest includes areas that draw drinking water from the River (Beaufort and Jasper Counties in South Carolina and Port Wentworth in Georgia). Combining these areas, the analysis included data (U.S. Bureau of the Census 1990a,b) for populations in all census tracts that have at least 20 percent of their area in the 50-mile (80-kilometer) radius and all tracts from Beaufort and Jasper Counties in South Carolina and Effingham and Chatham Counties in Georgia, which are downstream of the Site. DOE used data from each census tract in this combined region to identify the racial composition of communities and the number of persons characterized by the U.S. Bureau of the Census as living in poverty. The combined region contains 247 census tracts, 99 in South Carolina and 148 in Georgia.

TE | Tables 4-68 and 4-69 list racial and economic characteristics, respectively, of the population in the combined region. Table 4-68 indicates a total population of more than 993,000 in the area; of that population, approximately 618,000 (62.2 percent) are white. Within the population of people of color, approximately 94 percent are African American. The remainder of the population of people of color consists of small percentages of Asian, Hispanic, and Native American persons. Figure 4-38 shows the distribution of people of color by census tract areas in the SRS region.

TE | **Table 4-68.** General racial characteristics of population in the Savannah River Site region of interest.^a

State	Total population	White	People of color	African American	Hispanic	Asian	Native American	Other	Percent people of color ^b
South Carolina	418,685	267,639	151,046	144,147	3,899	1,734	911	355	36.08%
Georgia	<u>574,982</u>	<u>350,233</u>	<u>224,749</u>	<u>208,017</u>	<u>7,245</u>	<u>7,463</u>	<u>1,546</u>	<u>478</u>	<u>39.09%</u>
Total	993,667	617,872	375,795	352,164	11,144	9,197	2,457	833	37.82%

a. Source: U.S. Bureau of the Census (1990a).

b. People of color population divided by total population.

Table 4-69. General poverty characteristics of population in the Savannah River Site region of interest.^a | TE

Area	Total population	Persons living in poverty ^b	Percent living in poverty
South Carolina	418,685	72,345	17.28%
Georgia	<u>574,982</u>	<u>96,672</u>	<u>16.81%</u>
Total	993,667	169,017	17.01%

a. Source: U.S. Bureau of the Census (1990b).

b. Families with income less than the statistical poverty threshold, which in 1990 was 1989 income of \$8,076 for a family of two.

Executive Order 12898 does not define minority populations. One approach is to identify communities that contain a simple majority of people of color (greater than or equal to 50 percent of the total community population). A second approach suggested by the Interagency Working Group defines communities of people of color as those that have higher-than-average (over the region of interest) percentages of minority persons (EPA 1996). For this analysis, DOE has adopted the second, more expansive, approach to identify people-of-color communities. DOE uses two shading patterns in Figure 4-38 to indicate census tracts where (1) people of color constitute 50 percent or more of the total population in the census tract, or (2) people of color constitute between 35 percent and 50 percent of the total population in the tract.

The combined region has 80 tracts (32.4 percent) where populations of people of color constitute 50 percent or more of the total population of the tract. In an additional 50 tracts (20.2 percent), people of color constitute between 35 and 50 percent of the population. These tracts are well distributed throughout the region, although there are more of them toward the south and in the immediate vicinities of Augusta and Savannah, Georgia.

Low-income communities are defined as those in which 25 percent or more of the population is characterized as living in poverty (EPA 1993b). The U.S. Bureau of the Census defines persons in poverty as those whose income is less than a "statistical poverty threshold." This threshold is a weighted average based on family size and the

age of the persons in the family. The baseline threshold for the 1990 census was a 1989 income of \$8,076 for a family of two.

Table 4-69 indicates that in the SRS region, more than 169,000 persons (about 17.0 percent of the total population) are characterized as living in poverty. In Figure 4-39, shaded census tracts identify low-income communities. In the region, 72 tracts (29.1 percent) are low-income communities, which are distributed throughout the region of interest, but primarily to the south and west of the SRS. | TE

4.4.2 ENVIRONMENTAL JUSTICE ASSESSMENT

This EIS evaluates if communities of people of color or low income could be recipients of disproportionately high and adverse human health and environmental impacts. Even though DOE expects little or no adverse health impacts from any of the alternatives, it analyzed if there would be "disproportionately high and adverse human health or environmental effects [of these alternatives] on minority populations or low-income populations" (Executive Order 12898). Figures 4-38 and 4-39 show communities of people of color and low income by census tract. This section discusses predicted average radiation doses received by individuals in those communities and compares them to the predicted per capita doses that could be received in the other communities in the 50-mile (80-kilometer) region. This section also discusses impacts of doses that could be received

in the downstream communities from liquid effluents from all alternatives, and potential impacts from nonradiological pollutants.

Figure 4-40 shows a wheel with 22.5-degree sectors and concentric rings from 10 to 50 miles (16 to 80 kilometers) at 10-mile (16-kilometer) intervals. DOE calculated a fraction of the total population dose for each sector (Table 4-70), laid the sector wheel over the census tract map, and assigned each tract to a sector. If a tract fell in more than one sector, the analysis assigned it to the sector with the largest value.

DOE analyzed the impacts by comparing the per capita dose received by each type of community to the other types of communities in a defined region. To eliminate the possibility that impacts to a low-population community close to the SRS with a high dose per person would be diluted and masked by including it with a high-population community farther from SRS, the analysis made comparisons within a series of concentric circles, the radii of which increase in 10-mile (16-kilometer) increments. To determine the radiation dose received per person in each type of community, DOE multiplied the number of people in each tract by that tract's dose value to obtain a total population dose for each tract, and then summed the population doses for each type of community over each concentric circle and divided them by the total community population to obtain a community per capita dose for each circular area.

As discussed in Section 4.3.8.3, no adverse health effects are likely to occur in any offsite community, including minority and low-income communities. The following analyses provide details of the distribution of impacts only for the Shut Down and Deactivate Alternative (Section 4.4.2.2), which would have the greatest offsite total population dose.

4.4.2.1 No Action

Because the total offsite population dose under this alternative would be less than that for either of the other alternatives, the impacts among

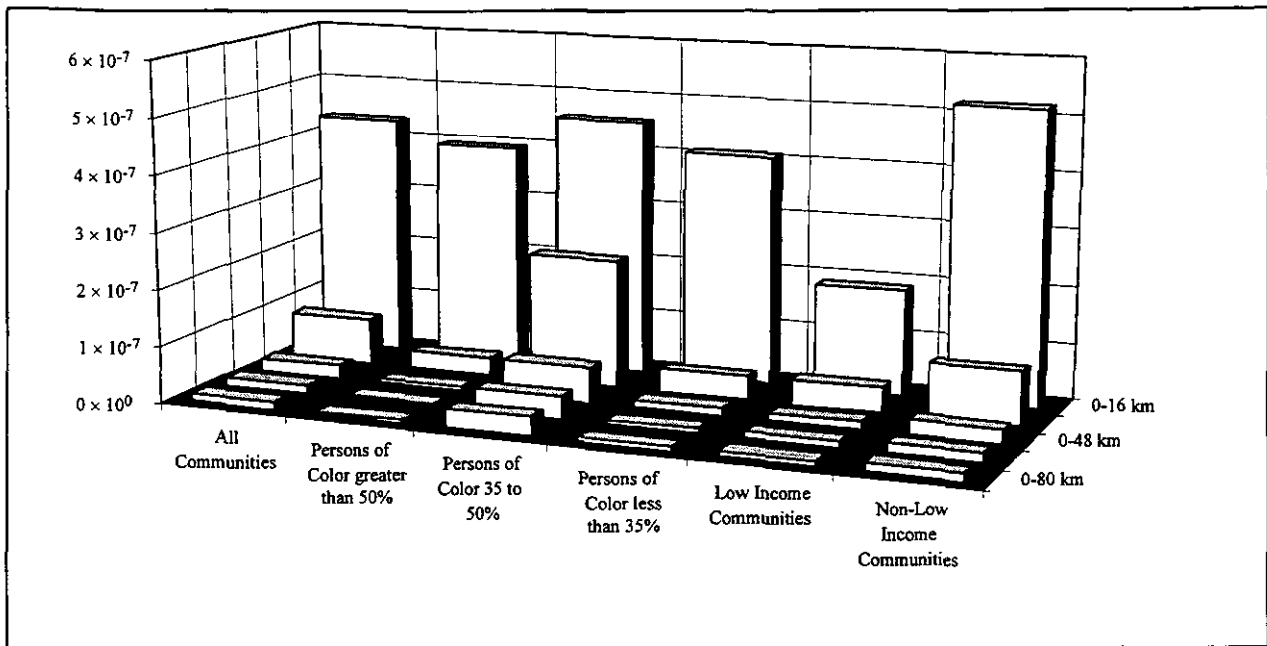
communities would be less than those for the other alternatives. The distribution of these small impacts among communities for the No-Action Alternative would be similar to the distribution of impacts for the Shut Down and Deactivate Alternative, which is discussed in Section 4.4.2.2. Impacts would be neither highly adverse nor disproportionate and would present no environmental justice concerns.

4.4.2.2 Shut Down and Deactivate

Figure 4-41 and Table 4-71 show the per capita distribution of the total population dose (2.40×10^{-3} person-rem) for this alternative in types of communities within the 50-mile (80-kilometer) region. As shown in Figure 4-41, the analysis indicates that atmospheric releases would not be highly disproportionate among communities of people of color (population equal to or greater than 35 percent of the total population) or low income (equal to or greater than 25 percent of the total population) in the 50-mile region; that is, in a horizontal comparison of Figure 4-41 the per capita doses would not vary greatly among community types.

Section 4.1.8.2.2 discusses predicted potential doses to the offsite maximally exposed individual and the downstream population from exposure to water resources. Those doses reflect people using the Savannah River for drinking water, sports, and food (fish). Because the identified communities in the areas downstream from SRS are well distributed and the potential impacts would be so small, there would be neither highly adverse nor disproportionate impacts among people of color or low-income communities.

The distribution of carcinogenic and criteria pollutant emissions would be essentially identical to those presented for airborne radiological emissions because the distribution pathways would be the same. As a result, people of color or low-income communities would not be disproportionately affected by nonradiological emissions from any of the alternatives. Because nonradiological pollutant emissions would have



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Figure 4-41. Community distributed impacts.

only minimal impacts for any alternative, and would not be disproportionately distributed among different types of communities, no environmental justice concerns would be related to these pollutants for any alternative.

would be the same as those for the Shut Down and Deactivate Alternative, and the impacts would be neither highly adverse nor disproportionate.

4.4.2.3 Shut Down and Maintain

The distribution of impacts among communities for the Shut Down and Maintain Alternative

Table 4-71. Estimated per capita annual dose for identified communities in 80-kilometer region.

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Distance	Persons of color				Low income	
	For all communities	Greater than 50 percent of population	35 percent to 50 percent of population	Less than 35 percent of population	Low income communities	Non-low income communities
0-16 km	4.33×10^{-7}	3.94×10^{-7}	4.57×10^{-7}	4.07×10^{-7}	1.86×10^{-7}	5.2×10^{-7}
0-32 km	8.09×10^{-8}	3.1×10^{-8}	2.26×10^{-7}	4.07×10^{-8}	4.4×10^{-8}	9.34×10^{-8}
0-48 km	2.22×10^{-8}	5.75×10^{-9}	6.22×10^{-8}	1.37×10^{-8}	1.4×10^{-8}	2.45×10^{-8}
0-64 km	1.48×10^{-8}	4.67×10^{-9}	4.01×10^{-8}	8.31×10^{-9}	1×10^{-8}	1.6×10^{-8}
0-80 km	1.31×10^{-8}	3.95×10^{-9}	3.3×10^{-8}	7.84×10^{-9}	8.62×10^{-9}	1.43×10^{-8}

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- a. Per capita dose based on a population dose of 0.002588 person-rem.
 b. To convert miles to kilometers, multiply by 1.6093.